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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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EXAMINER

APPLIED MATERIALS INC
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ART UNIT

PAPER NUMBER

8

1765

DATE MAILED:

07/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

| | |
|-------------------------------|------------------------------|
| Application No. 09/206,027 | Applicant(s) Cohen et al. |
| Examiner Lan Vinh | Group Art Unit 1765 |



Responsive to communication(s) filed on 5/23/00

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1035 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

- Claim(s) 1-23 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- Claim(s) _____ is/are allowed.
- Claim(s) 1, 2, 4, 6-9, 11-14, and 17-23 is/are rejected.
- Claim(s) 3, 10, 15, and 16 is/are objected to.
- Claims _____ are subject to restriction or election requirement.

Application Papers

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- The drawing(s) filed on _____ is/are objected to by the Examiner.
- The proposed drawing correction, filed on _____ is approved disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- All Some* None of the CERTIFIED copies of the priority documents have been received.
- received in Application No. (Series Code/Serial Number) _____
- received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). 6
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

-- SEE OFFICE ACTION ON THE FOLLOWING PAGES --

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "an etch rate" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5 are rejected under 35 U.S.C 102(b) as being anticipated by Seita et al. (US 5,527,718).

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Seita discloses a process for removing impurities from polycide electrode comprising exposing a patterned substrate surface to a plasma treatment comprising argon, helium and hydrogen inherently in a processing chamber (col 8, lines 7-10 and fig. 1C).

Regarding claim 5, Seita discloses the substrate surface comprises silicon oxide (col 5, lines 27-28).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 4, 6, 7, 8, 11, 12, 13, 14, 17-23 are rejected under 35 U.S.C 103(a) as being unpatentable over Konecni et al. (EP 0849 779 A2) in view of Davis et al. (US 5,248,636).

Konecni discloses a process for forming a semiconductor structure using plasma etching comprising exposing a patterned substrate surface to a plasma comprising argon, helium, hydrogen in a processing chamber (col 6, lines 40-47 and fig. 4).

Unlike the instant claimed invention as per claims 4, 8, 14, Konecni does not specifically disclose the step of increasing the flow rate of helium to increase the etch rate.

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However, Davis discloses a plasma processing method to treat a substrate comprises the step of increasing the flow rate (content) of helium to increase the etch rate (col 61, lines 41-49).

One skilled in the art would have found it obvious to modify Konecni's process by adding a step of increasing the flow rate (content) of helium to increase the etch rate as per Davis because a high content helium enhances the single crystal silicon etch rate in order to achieve a high degree of etch rate uniformity of the patterned substrate.

Regarding claims 6, 12, Konecni discloses that the plasma is capacitively and inductively powered by bias power (col 3, lines 42-44).

Regarding claims 7, 13 Konecni discloses introducing argon, helium, hydrogen into the processing chamber to establish a low or vacuum pressure (10^{-7} Torr to 10^{-8} Torr) (col 4, lines 34-35; col 6, lines 30-45).

Regarding claims 21-23, Konecni discloses generating the plasma by delivering power level of between 150-450 W to the processing chamber (col 3, lines 40-43).

Regarding claims 2, 14, 18-20, Konecni discloses the plasma comprises about less than 75% by volume of argon (hydrogen flow rate is 1sccm and argon flow rate is 4 sccm argon) (col 3, lines 55-58).

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Allowable Subject Matter

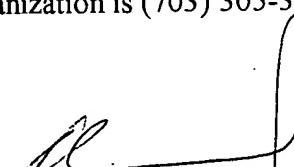
7. Claims 3, 10, 15, 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1-2, 4-9, 11-14, 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is (703) 305-6302. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Benjamin Utech, can be reached on (703) 308-3836. The official fax number for the organization is (703) 305-3599.



ROBERT KUNEMUND
PRIMARY PATENT EXAMINER
A.U. 117

LV

June 30, 2000